

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Mitsuru Ozono, et al.
Appln. No. : 10/620,184
Filed : July 15, 2003
Title : METHOD AND APPARATUS FOR PICKING UP SEMICONDUCTOR
CHIP AND SUCTION AND EXFOLIATION TOOL USED THEREFOR

Conf. No. : 8698
Art Unit : 1791
Examiner : Mark A. Osele

Customer No. : 00116
Docket No. : NGB-35857

PRE-APPEAL BRIEF REQUEST FOR REVIEW

A pre-appeal brief conference is respectfully requested in the present application because there exist clear errors in the examiner's rejections.

1. The examiner improperly failed to consider a limitation of the present claims

Claims 1-2 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,709,543 (Kurosawa) in view of either U.S. 2001/0029088 (Odajima et al.) or U.S. 2003/0070517 (Tsujimoto). The examiner failed to properly consider the limitation, "*the semiconductor chip adhered to the sheet is bent and deformed by a vacuum suction force in an almost same bent shape in a continuous bent range from an outer peripheral portion of one side of the chip to an outer peripheral portion of another one side of the chip thereby to exfoliate the sheet from a lower surface of the semiconductor chip using only the vacuum suction force.*" The examiner relied on Figs. 19A, 20A, 21A and column 17, lines 13-27 and 35-45 of Kurosawa as disclosing this limitation. However, Kurosawa discloses that the semiconductor chip is bent and

deformed *by the upward action of the thrust pins, and not by a vacuum suction force*, as required by claims 1 and 11. Further, Kurosawa discloses that the sheet is exfoliated from a lower surface of the semiconductor chip by the upward action of the thrust pins, as opposed to using only the vacuum suction force, as required by claims 1 and 11. The cited section of Kurosawa (column 17, lines 13-27 and 35-45) states:

at the time of separation of the semiconductor chip 1 from the adhesive sheet 22, the corner portions are first separated by the first thrust pin group 24a and then the nearby portion of the central portion is separated by the second thrust pin group 24b... Further, the semiconductor chip 1 is separated by use of a large number of thrust pins of the groups 24a, 24b... (emphasis added).

There is no mention in this embodiment of Kurosawa of the use of vacuum suction to either bend and deform the semiconductor chip or to exfoliate the sheet from a lower surface of the chip, as required by claims 1 and 11. In fact, in each of the embodiments of Kurosawa that discloses using a vacuum suction force, the semiconductor chips are significantly thicker and do not bend at all. See, for example, Figs. 12, 14, 16, and 22. Note that in the Figures of Kurosawa there appear to be semiconductor chips of two distinct thicknesses. The thin chips are shown in Figs. 3A-10A, 18A-21A, and 26A-29A; while the thick chips are shown in Figs. 1, 12, 14, 16, and 22. Only the thin chips are shown as being bent and deformed during the exfoliation process but only the thick chips are shown as being used with a vacuum suction force.

Moreover, the cited references fail to show a bent range set in a direction which forms a predetermined angle with respect to one side of the semiconductor chip wherein the bent range includes a corner portion of the semiconductor chip and wherein the predetermined angle is about 45 degrees, as recited in claim 1. The examiner relies on Odajima to disclose this limitation. However, while Odajima may teach the chip rotating at 45 degrees, Odajima does not

disclose the bending and deformation of the chip. With respect to Tsujimoto, while Tsujimoto does disclose that the protective sheet can be peeled at a 45-degree angle, there is nothing that discloses that peeling at such an angle lessens the chance of breaking a chip, as contended by the examiner. Rather, it is the timing of the peeling operation (i.e., between the dicing and grinding operations) that avoid breakage and damage to the chips. Thus, there is nothing within Tsujimoto that would have suggested to one skilled in the art to modify the apparatus and method of Kurosawa to provide a bent range set in a direction with a predetermined angle of about 45 degrees with respect to a side of the chip. Accordingly, it is not disclosed that the bent range includes a corner portion of the semiconductor chip recited in claim 1.

Claims 1-2 and 5-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-118862 (Akira) in view of U.S. 6,709,543 (Kurosawa) and either U.S. 2001/0029088 (Odajima et al.) or U.S. 2003/0070517 (Tsujimoto). Here the examiner concedes that Akira fails to show the semiconductor chip being bent and thus relies on Kurosawa in an attempt to disclose this limitation. However, as stated above, Kurosawa fails to disclose that the semiconductor chip is bent by use of the vacuum suction force alone. Instead, Kurosawa only discloses that the semiconductor chip can be bent by an upward force of the thrust pins.

For at least the reasons above, it is requested that the examiner's rejection be reversed.

2. *There exist clear fact and legal deficiencies in the rejections of record.*

It is well established in the law that it is improper to combine references where the references teach away from their combination. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). See also MPEP Section 2141.02. It is also well established that a proposed modification cannot render

the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). See also MPEP Section 2143.01. In the present case, the examiner proposes to combine Kurosawa (U.S. Patent No. 6,709,543) with either Odajima et al. (U.S. Patent Publication 2001/0029088) or Tsujimoto (U.S. Patent Publication 2003/0070517). The examiner does not appear to be mischaracterizing or misinterpreting the references, but is instead ignoring the well-settled law. Kurosawa is directed to a separation method using thrust pins and a vacuum source; while both Odajima and Tsujimoto use peeling operations. There is no peeling operation in Kurosawa. Further, Odajima expressly discourages *teaches away* from the thrust pin and vacuum methods disclosed in Kurosawa in favor of the peeling methods disclose in Odajima and Tsujimoto. The examiner should not be permitted to ignore the law that expressly forbids the purported combination.

For at least the reasons discussed herein, essential elements required to establish a prima facie rejection were omitted; and there exist clear fact and legal deficiencies in the rejections of record. Accordingly, reversal of the present rejections is requested.

Respectfully submitted,
PEARNE & GORDON LLP

By: /Una L. Lauricia/
Una L. Lauricia – Reg. No. 48,998

1801 East 9th Street
Suite 1200
Cleveland, Ohio 44114-3108
(216) 579-1700

Date: June 23, 2008